

Graphing: Ratios and Rates

Name _____

The graph of a rate or ratio can help show patterns. To graph a rate or ratio, first create a table of values. Then plot the values as ordered pairs.

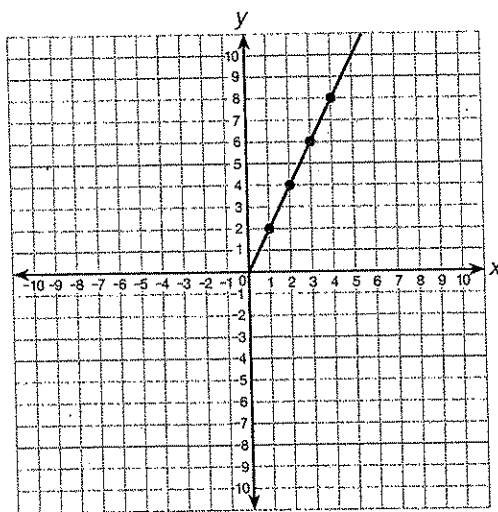
Example

For every hour that Wanda drives on the highway, she uses 2 gallons of gasoline. Represent Wanda's rate of gasoline usage with a graph on a coordinate plane.

Before you can graph the rate, create a table of values. Multiply the rate by whole numbers. For instance, if Wanda drives $1 \times 3 = 3$ hours, she uses $2 \times 3 = 6$ gallons of gasoline.

Hours Driven on Highway, x	Gallons of Gasoline Used, y
1	2
2	4
3	6
4	8

Now you can represent each pair of values from the rows in the table as an ordered pair. Use the hours driven on the highway for x and the gallons of gasoline used for y . The following are ordered pairs: (1, 2), (2, 4), (3, 6), (4, 8).



The line connecting the ordered pairs helps show the relationship between the two variables: the hours driven and the gallons of gasoline used. You can continue to plot additional ordered pairs onto the grid. For example, if Wendy drives 5 hours, she will use 10 gallons of gasoline. You can plot (5, 10) on the graph.

You can compare more than one rate or ratio on the same graph.

Example

For every 2 minutes, Desmond reads 3 pages in his book. Esmeralda created the table below, recording the numbers of pages she read in so many minutes. Graph the readers' rates to compare them.

Esmeralda	
Minutes	Pages Read
3	5
6	10
9	
	20

To graph their reading rates, create a table for Desmond's reading rate and complete Esmeralda's table. To create Desmond's table, multiply his rate by whole numbers. For instance, if Desmond reads for $2 \times 2 = 4$ minutes, he will read $3 \times 2 = 6$ pages.

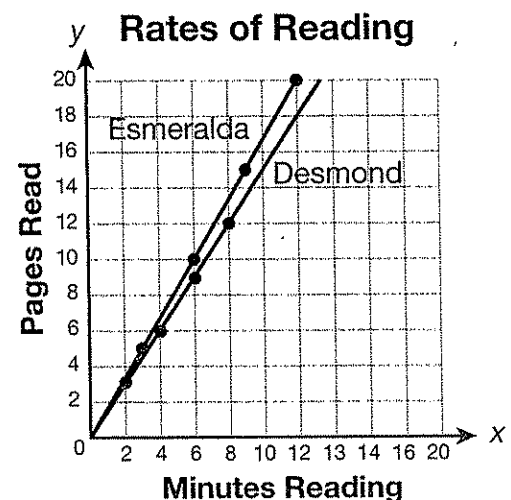
Esmeralda reads 5 pages for every 3 minutes. If Esmeralda reads for $3 \times 3 = 9$ minutes, she will read $5 \times 3 = 15$ pages. If Esmeralda reads $5 \times 4 = 20$ pages, she has read for $3 \times 4 = 12$ minutes.

Desmond	
Minutes	Pages Read
2	3
4	6
6	9
8	12

Esmeralda	
Minutes	Pages Read
3	5
6	10
9	15
12	20

Represent each pair of values from the table as an ordered pair. Use the minutes for x and the pages read for y . Because it is not possible to read for a negative number of minutes, the graph shows the first quadrant only.

The steepness of the lines shows how quickly Desmond and Esmeralda read. Because the line representing Esmeralda's reading rate is steeper, it means that she reads more pages per minute. Esmeralda reads at a faster rate.

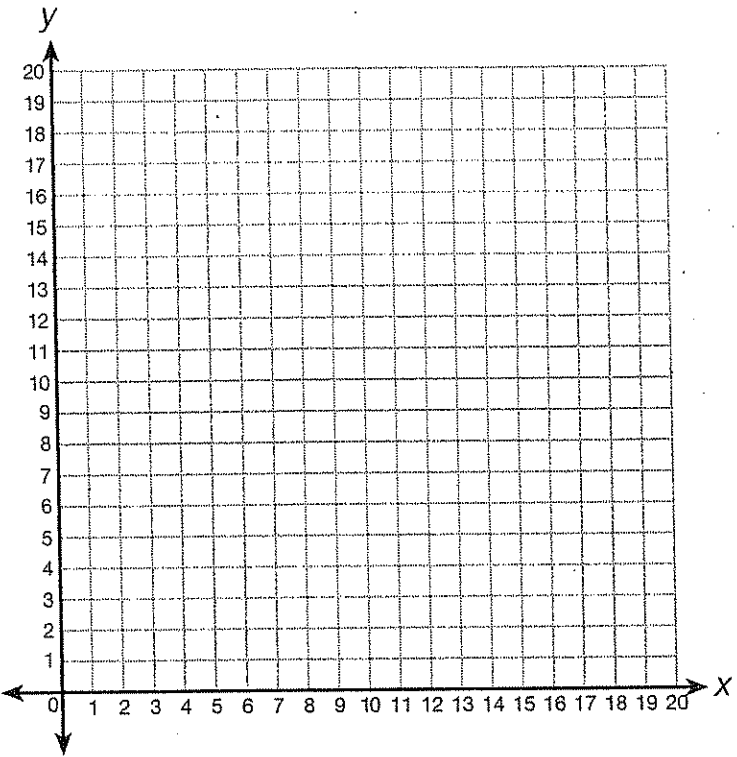


Practice

Directions: For questions 1 and 2, create a table of values for the given scenario. Then graph the points on the coordinate plane.

1. During the first 6 months of Audrey's life, she grew 1 inch each month.

Audrey's Age (in months)	Growth (in inches)



2. Roberto times his workouts at the gym. Every 4 seconds, he can do 3 push-up.

Number of Seconds	Number of Push-ups

